

IN THE CLAIMS

Please amend the claims to read as follows:

Listing of Claims

1-9. (Canceled).

10. (New) A six-degrees-of-freedom horizontal movement dynamic simulator comprising:

three movement control units located separately at positions forming three sides of an equilateral triangle, each movement control unit comprises a universal-joint yoke mechanism, two connecting rods of fixed length, two transmission-joint yoke mechanisms, two sliding seats, two lead screws, two servo-driving mechanisms, a rectilinear translation guide, and two guide seats, and each movement control unit generates rectilinear translation motion and forms a symmetric structure; and

a load-carrying platform pivotally connected to the three movement control units by the universal-joint yoke mechanism corresponding to each movement control unit, wherein for each movement control unit:

one end of each of the two connecting rods is jointly pivoted to the universal-joint yoke mechanism to provide a spatial motion of 3 degrees of freedom relative to the

load-carrying platform and the other ends of the two connecting rods are symmetrically and separately pivoted to corresponding transmission-joint yoke mechanisms to provide a spatial motion of 2 degrees of freedom,

each transmission-joint yoke mechanism is pivoted to the corresponding sliding seat to enable 1 degree of freedom,

the two lead screws pass through the two sliding seats and engage with the corresponding sliding seat such that the rotating angle and speed of each lead screw is controlled by the corresponding servo-driving mechanism,

the two sliding seats are mounted and slide on the rectilinear translation guide such that the rectilinear translation motion of the sliding seat on the rectilinear translation guide is precisely controlled by the rotating angle and speed of the corresponding sliding seat, so as to provide a precise control of the spatial motion and linear and angular displacement of the load-carrying platform,

the rectilinear translation guide comprises two straight sliding rails in parallel fixed on a guide, and

each of the two guide seats has two parallel guide slots on the bottom side to match and ride on the two parallel straight sliding rails and slide along the direction of the guide rails,

each servo-driving mechanism comprises a servo-motor that drives the corresponding lead screw and controls its rotating angle and speed,

each sliding seat has a rectangular block shape, a pivoting recess on the top side for pivotally mounting the corresponding transmission-joint yoke mechanism, and its bottom side fastened to one of the guide seats,

on the vertical surface of each sliding seat are two penetrating holes one of which has a female screw thread and engages with the corresponding lead screw and the other hole serves as the passage for the other lead screw to pass through,

each transmission-joint yoke mechanism comprises an upward yoke assembly and a T-shaped pivot axis that is pivotally assembled together with the yoke assembly, two horizontal stub shafts formed on and extending from opposite sides of the T-shaped pivot axis are pivotally mounted on the two vertical portions of the upward yoke assembly, a perpendicular stub shaft extends from the center position of the yoke assembly for pivotally mounting one end of the corresponding connecting rod, a mounting shaft is extended from the bottom side of the upward yoke assembly and is pivotally mounted in the mounting recess of the corresponding sliding seat, and

the universal-joint yoke mechanism comprises a downward yoke, a cardan shaft, a neck-ring seat and a cover plate, two horizontal stub shafts are formed and extend oppositely from left and right sides of the cardan shaft and are pivoted to the two vertical portions of the downward yoke, two perpendicular stub shafts are formed on and extend oppositely from the front and rear sides of the cardan shaft and are separately and pivotally connected to the connecting rod, a mounting shaft is formed on the top side of the downward yoke and pivotally mounted to the neck-ring seat, the bottom side of the cover plate is fastened to the upper side of the neck-ring seat and the top side of the cover plate is fastened to the load-carrying platform.

11. (New) The six-degrees-of-freedom horizontal movement dynamic simulator of claim 10, wherein each sliding seat comprises a sliding block and a neck-ring seat, the bottom side of the sliding block is fastened to the guide seat of the rectilinear translation guide and the neck-ring seat is fastened to the top side of the sliding block with the mounting shaft of the upward yoke pivotally mounted in the mounting recess of the neck-ring seat.

12. (New) The six-degrees-of-freedom horizontal movement dynamic simulator of claim 11, wherein a fastening plate is fastened on the top side of the sliding block and the bottom side of the neck-ring seat is fastened to the top side of fastening plate.

13. (New) A six-degrees-of-freedom horizontal movement dynamic simulator comprising:

three movement control units located at positions forming three sides of an equilateral triangle, each movement control unit comprises a machine bed, a universal-joint yoke mechanism, two connecting rods of fixed length, two transmission-joint yoke mechanisms, two sliding seats, two lead screws, two servo-driving mechanisms, and a rectilinear transmission guide; and

a load-carrying platform pivotally connected to the three movement control units by the universal-joint yoke mechanism corresponding to each movement control unit, wherein for each movement control unit:

the machine bed is a longitudinal stand having an inverse U-shaped cross section with two cover plates fixed on both ends of the bed,

the rectilinear transmission guide has two parallel straight sliding rails fastened on its top side and two guide seats,

having two parallel guide slots on their bottom sides, for matching the straight sliding rails and sliding in the direction of the straight rails,

each of the servo-driving mechanisms is installed near the end of the machine bed by a bearing plate that serves as the support of the two lead screws, the servo-driving mechanism also has a servo-motor installed inside the machine bed to provide a driving system with the corresponding lead screw so as to control the rotating angle and speed of the lead screw,

each sliding seat comprises a sliding block and a neck-ring seat, the bottom side of the sliding block is fastened on the guide seat of the rectilinear translation guide, and the sliding block has two penetrating holes on its vertical surfaces of which one hole has a female screw thread for engaging with a corresponding lead screw and the other hole serves as the passage for the other lead screw to pass through, the neck-ring seat is fastened on the top side of the sliding block and has a mounting recess in a center position for pivotally installing a mounting shaft of the yoke of the transmission-joint yoke mechanism,

each transmission-joint yoke mechanism comprises an upward yoke and a T-shaped pivot axis, the T-shaped pivot axis has two horizontal stub shafts formed on and extending from opposite sides and pivoted on the two vertical portions of the upward

yoke, the T-shaped pivot axis has a perpendicular stub shaft that is pivotally connected to one end of the corresponding connecting rod, the mounting shaft is formed on the bottom side of the upward yoke and is pivotally installed on the mounting recess of the corresponding sliding seat, and

the universal-joint yoke mechanism comprises a downward yoke, a cardan shaft, a neck-ring seat and a cover plate, the cardan shaft has two horizontal stub shafts formed on and extending from the left and right side, which are pivoted on the two vertical portions of the downward yoke, also two perpendicular stub shafts are formed and extend from the rear and front side and are each pivotally and separately mounted on one of the two connecting rods, the downward yoke has a mounting shaft on the top side that is pivotally installed on the neck-ring seat, and the cover plate has its bottom side fastened on the neck-ring seat and top side fastened to the load-carrying platform.

14. (New) The six-degrees-of-freedom horizontal movement dynamic simulator of claim 13 wherein a fixing plate is installed on the top side of the sliding block and the bottom side of the neck-ring is fixed on the top side of the said fixing plate.

15. (New) The six-degrees-of-freedom horizontal movement dynamic simulator of claim 13, wherein the sliding seat is in the shape of a rectangular block.

16. (New) A six-degrees-of-freedom horizontal movement dynamic simulator comprising:

three movement control units located in positions forming three sides of an equilateral triangle, each movement control unit comprising a universal-joint yoke mechanism, two connecting rods of fixed length, two sliding yoke mechanisms, two lead screws, two servo-driving mechanisms, and a rectilinear translation guide; and

a load carrying platform connected to the three movement control units by the universal-joint yoke mechanism of each movement control unit, wherein for each movement control unit:

the rectilinear translation guide has two straight sliding rails parallel to each other and two guide seats, each of which has two parallel guide slots on the bottom side for matching the two straight sliding rails and sliding along the direction of the rails,

each servo-driving mechanism comprises a servo-motor that provides a driving system with a corresponding lead screw for



driving and controlling the rotating angle and speed of the lead screw,

each sliding yoke mechanism comprises an upward yoke, a pivoting plate, a shaft, two fixing blocks, one L-shaped sliding yoke plate, one sliding fastening plate and two cover plates, the L shaped sliding yoke plate has a horizontal portion and a vertical portion, a pivoting hole is formed in the vertical portion and the bottom side of the horizontal portion is fastened on the guide seat of the rectilinear transmission guide, the L-shaped sliding yoke plate has two penetrating holes in the vertical portion, one of which has a female screw thread for engaging with a corresponding lead screw and the other hole serves as the passage for the other lead screw to pass through;

the L-shaped sliding yoke plate and the sliding fastening plate are assembled to form an L-shaped yoke assembly, on the sliding fastening plate are two penetrating holes and a pivoting hole in the positions corresponding to the positions of the two penetrating holes and one pivoting hole on the L-shaped sliding yoke plate, the two penetrating holes on the sliding fastening plate are the passages for the lead screw to pass through,

the pivoting plate is in the shape of a rectangular plate with a pivoting recess on the center position and two horizontal stub shafts formed on and extending from two opposite sides that

are pivotally installed on the pivoting holes on the vertical portion of the L-shaped sliding yoke plate and the sliding fastening plate, and two cover plates for supporting the stub shafts of the pivoting plate are separately fastened on the vertical portion of the L-shaped sliding yoke plate and the sliding fastening plate,

the upward yoke has a mounting shaft on the bottom side that is pivotally installed on the pivoting recess in the center position of the pivoting plate, on the top side of the two vertical portions of the upward yoke are two semicircular recesses, the two fixing blocks have corresponding semicircular recesses and are fastened to the two vertical portions, a shaft is pivotally mounted through the recesses for supporting one end of one of the two connecting rods, and

the universal-joint yoke mechanism comprises a downward yoke, a pivoting plate, a shaft, two fixing blocks, an L-shaped yoke plate, a fastening plate and two cover plates, the L-shaped yoke plate has a horizontal portion and a vertical portion, the horizontal portion is fastened to the load-carrying platform and the vertical portion has a pivoting hole, the assembly of the L-shaped yoke plate and fastening plate forms a downward yoke for mounting stub shafts formed on and extending from the left and right sides of the pivoting plate, which is in the shape of a

rectangular plate and has a pivoting recess on a center position, two cover plates are fastened on the vertical portion of the L-shaped yoke plate and the fastening plate to fix the whole assembly, the downward yoke has a mounting shaft that is pivotally installed on the pivoting recess in the center position of the pivoting plate and has semicircular recesses on the bottom side of its two vertical portions for mounting a shaft by installing two fixing blocks having the same semicircular recess to the bottom side of the two vertical portions, and one end of each of the two connecting rods is pivotally and separately mounted on opposite ends of the shaft.